

WHAT IS CLAIMED IS:

- 1 1. An isolated CLASP-2 polynucleotide, wherein said polynucleotide is
2 (a) a polynucleotide that has the sequence of SEQ ID NO: 1, 3, 5 or 9; or
3 (b) a polynucleotide that hybridizes under stringent hybridization conditions to
4 (a) and encodes a polypeptide having the sequence of SEQ ID NO: 2, 4, 6 or 10 or an allelic
5 variant or homologue of a polypeptide having the sequence of SEQ ID NO: 2, 4, 6 or 10; or
6 (c) a polynucleotide that hybridizes under stringent hybridization conditions to
7 (a) and encodes a polypeptide with at 25 contiguous residues of the polypeptide of SEQ ID
8 NO: 2, 4, 6 or 10; or
9 (d) a polynucleotide that hybridizes under stringent hybridization conditions to
10 (a) and has at least 12 contiguous bases identical to or exactly complementary to SEQ ID NO:
11 1, 3, 5 or 9.
- 1 2. The polynucleotide of claim 1, wherein said polypeptide specifically
2 binds to a PDZ domain of PSD95, DLG1 or neDLG.
- 1 3. The polynucleotide of claim 2, wherein said polypeptide has a binding
2 affinity of at least 10^4 M^{-1} for binding PSD95, DLG1 or neDLG.
- 1 4. The polynucleotide of claim 1 that encodes a polypeptide having the
2 full-length sequence of SEQ ID NO: 2, 4, 6 or 10.
- 1 5. The isolated polynucleotide of claim 1, comprising the cDNA coding
2 sequence of ATCC Deposit Nos. PTA-1562 and PTA-1563 and PTA-1573.
- 1 6. An isolated CLASP-2 polynucleotide comprising a nucleotide
2 sequence that has at least 90% percent identity to SEQ ID NO: 1, 3, 5 or 9.
- 1 7. An isolated polypeptide comprising a nucleotide sequence that has at
2 least 90% sequence identity to SEQ ID NO: 2, 4, 6 or 10 and is immunologically
3 crossreactive with SEQ ID NO: 2, 4, 6 or 10 or shares a biological function with native
4 CLASP-2.
- 1 8. A vector comprising the polynucleotide of claim 1.

- 1 9. An expression vector comprising the polynucleotide of claim 1 in
2 which the nucleotide sequence of the polynucleotide is operatively linked with a regulatory
3 sequence that controls expression of the polynucleotide in a host cell.
- 1 10. A host cell comprising the polynucleotide of claim 1, or progeny of the
2 cell.
- 1 11. A host cell comprising the polynucleotide of claim 1, wherein the
2 nucleotide sequence of the polynucleotide is operatively linked with a regulatory sequence
3 that controls expression of the polynucleotide in a host cell, or progeny of the cell.
- 1 12. The host cell of claim 10 which is a eukaryote.
- 1 13. The polynucleotide of claim 1 that is an antisense polynucleotide less
2 than about 200 bases in length.
- 1 14. An antisense oligonucleotide complementary to a messenger RNA
2 comprising SEQ ID NO: 1, 3, 5 or 9 and encoding CLASP-2, wherein the oligonucleotide
3 inhibits the expression of CLASP-2.
- 1 15. An isolated DNA that encodes a CLASP-2 protein as shown in SEQ ID
2 NO: 2, 4, 6 or 10.
- 1 16. The polynucleotide of claim 1 that is RNA.
- 1 17. A method for producing a polypeptide comprising:
2 (a) culturing the host cell of claim 10 under conditions such that the
3 polypeptide is expressed; and
4 (b) recovering the polypeptide from the cultured host cell or its cultured
5 medium.
- 1 18. An isolated polypeptide encoded by a polynucleotide of claim 1 (a) or
2 (b).
- 1 19. The polypeptide of claim 18 that has the amino acid sequence of SEQ
2 ID NO: 2, 4, 6 or 10, or a fragment thereof.

1 20. The isolated polypeptide of claim 18, wherein the polypeptide is cell-
2 membrane associated.